

CHOCTAW BOTTOMS ROAD BRIDGE
Texas Historic Bridges Recording Project
Spanning Choctaw Creek at
Choctaw Bottoms Road (County Route 487)
Deason Vicinity
Grayson County
Texas

HABR No. TX-56

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HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
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HISTORIC AMERICAN ENGINEERING RECORD

CHOCTAW BOTTOMS ROAD BRIDGE

HAER No. TX-56

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Location: Spanning Choctaw Creek at Choctaw Bottoms Road
(County Route 487), Denison vicinity, Grayson County,
Texas.
UTM: 14/738060/3733710
USGS: Ambrose, Texas, quadrangle.

Date of Construction: Unknown.

Designer: Unknown.

Builder: American Bridge Company, New York, New York.

Present Owner: Grayson County.

Present Use: Vehicular bridge.

Significance: The Choctaw Bottoms Road Bridge is one of two extant
bridges in Texas known to have been erected by the
American Bridge Company of New York, a major
twentieth-century bridge building firm.

Historian: Robert W. Jackson, August 1996.

Project Information: This document was prepared as part of the Texas Historic
Bridges Recording Project performed during the summer of
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(HAER). The project was sponsored by the Texas
Department of Transportation (TxDOT).

Development of Grayson County

This approximately 80'-0"-long Warren pony truss was built by the American Bridge Company of New York, and is one of two extant bridges in Texas known to have been erected by that firm. The date of construction is unknown, but it is likely that American executed its contract for this bridge sometime within the first two decades of the company's creation in 1900.¹ The bridge spans Choctaw Creek at Choctaw Bottoms Road, a narrow dirt road that serves the predominately agricultural activities of this rural area.

The economy of Grayson County has had a strong foundation in agriculture since it was created by the Texas legislature on March 17, 1846, shortly after Texas was annexed to the United States. Named for Texas attorney general Peter Grayson, the county is drained principally by Choctaw Creek and its two main tributaries, Post Oak Creek and Iron Ore Creek. The northern portion of the county drains into the Red River, while the southern portion drains into tributaries of the Trinity River.²

Prior to the introduction of two railroad lines into the county in 1872, supplies from the east came into the area either by ox-pulled wagon trains from Jefferson, Texas, or by boats navigating the Red River, with landings at Shawneetown and at Preston.³ Any products or goods received or shipped from these points had to be carried by wagon across the creeks of the county at low-water crossings. The distances to be traveled and the number of creeks to be traversed were limiting factors in the expansion of the county's economy. These limitations were eased considerably with the introduction of the railroad in 1872.

On Christmas Eve of that year the first train of the Missouri, Kansas, and Texas Railroad reached the town of Denison. Denison was established by the railroad as a counter to the October 1872 introduction of the Houston and Texas Central railroad into the county seat at Sherman, located approximately ten miles southwest. The Texas and Pacific Railroad came to Sherman in April 1875, and the Cotton Belt Line arrived in 1888.⁴

These railroads facilitated the development of the regional economy because they made it easier for finished manufactured goods, including the metal truss bridges needed to span creeks,

¹ The Choctaw Bottoms Road Bridge is nearly identical to a bridge spanning Scott Creek at County Route 818, approximately 4.6 miles east of FM 901 in Grayson County. This bridge has an undated builder's plate clearly identifying the American Bridge Company as contractor.

² Donna J. Kumler, "Grayson County," in *The New Handbook of Texas*, vol. 3, ed. Ron Tyler (Austin: Texas State Historical Association, 1996), p. 298.

³ Mattie Davis Lucas and Mita Holsapple Hall, *A History of Grayson County, Texas* (Sherman, Texas: Scruggs Printing Company, 1936), p. 90.

⁴ *Ibid.*, pp. 164-65.

to be shipped into the area.⁵ They also created a number of points at which goods and produce could be shipped out of the county. Thus, area creeks became somewhat less of a barrier to commerce than they had been previously.

Following the introduction of the railroads, manufacturing and milling operations steadily expanded in the county, but the area economy remained predominately agricultural. The number of farms increased each year, reaching a high of 5,762 in 1900. The county recorded the highest production of corn in its history in 1900 with 3,681,640 bushels produced. High yields of wheat and cotton were also achieved, and commercial orchards flourished. Farms accounted for 553,527 of the county's 602,880 acres by 1910.⁶

A bill passed by the state legislature in 1903 empowered county commissioners' courts to issue bonds for road and bridge building, but development of the county transportation network was very slow. In 1908, Denison businessmen concerned with the poor condition of the county's transportation network established "Good Roads Districts" in an effort to facilitate the construction of new roads and bridges.⁷ Between 1910 and 1912 the first macadamized road in Texas was built from Denison to Carpenter's Bluff on the Red River, and the first county-wide road system, virtually all gravel, was established in 1915.⁸ In the first decade of the century, however, most of the roads in Grayson County were dirt, and the bridges erected across these roads were designed to serve only one lane of wagon traffic.

Choctaw Bottoms Road Bridge

The Choctaw Bottoms Road Bridge is not unusual in terms of its basic design. The Warren pony truss is a very common bridge type, particularly well suited for use on secondary, moderately traveled roads such as those serving rural areas of Grayson County. In its original form, the Warren truss was composed of a series of equilateral triangles, without any vertical members. The diagonals function both as compression and tension members, and without counters or verticals the mid-span members can suffer from stress reversal under certain loads.

British engineers James Warren and Willoughby Monzani built the first Warren truss in 1846, and patented the design in England in 1848. Unaware of the British patent, Squire Whipple built the first Warren truss in American a few years after it was introduced in England.

⁵ Graham Landrum and Allen Smith, *Grayson County: An Illustrated History of Grayson County, Texas* (Fort Worth: Historical Publishers, 1967), p. 8.

⁶ Kumler, p. 299.

⁷ B. McDaniel, "Highway Administration in Grayson County, Texas" (M.A. thesis, University of Texas at Austin, 1929), pp. 97-99.

⁸ Sherrie S. McLeRoy, *Black Land, Red River: A Pictorial History of Grayson County, Texas* (Virginia Beach, Virginia: Donning Company, 1993), p. 107; Kumler, p. 299.

Due to the potential problems caused by stress reversal at mid-span, such as excessive wear at pin connections, the design was initially slow to catch on in America. However, as bolts and rivets began to replace pin connections toward the end of the nineteenth century, the form began to gain wider acceptance. Warren trusses were often built with vertical members which stiffen the entire structure, and in this configuration the design eventually became very popular.⁹

Like most surviving Warren trusses, the Choctaw Bottoms Road Bridge was built with vertical members.¹⁰ The inclined end posts and top chord of this truss are made up of 1'-0" wide, 1/4" thick steel plates riveted to 5 7/8" x 3" angles made of 1/4" thick steel. The top chord angles are held together with 5" x 11" battens. The hip verticals are 2 7/8" x 2 7/8" angles laced together by riveted steel lacing bars 1/8" thick and 2" wide. Gusset plates are riveted and bolted with 1 1/4" rivets and 1 1/4" bolts. Some bolts are square, but most are hexagonal. The deck is 12'-0" wide from the inside of one inclined end post to the inside of the opposite post.

The truss is supported by hollow steel columns, with one column located under each of the two up-stream bearing plates, and with both a large and a smaller column under each of the two down-stream bearing plates. It appears that the smaller columns are not part of the original substructure. Additional small columns have been placed between the abutments and the main truss support columns in order to support the approaches. It is known that substantial repair of the substructure was performed about 1956, and these additional columns could date from that effort.

American Bridge Company

The bridge was built by the American Bridge Company, an amalgamation of about twenty-five competing firms representing approximately fifty percent of the nation's fabricating capacity which was organized by J. P. Morgan and Company in April 1900. Less than a year later most of its stock was acquired by United States Steel Corporation. Other companies were subsequently added to the corporation, and the firm was by far the most dominant bridge construction company in America in the early twentieth century. The work of this corporation is fairly well documented and is familiar to bridge historians.¹¹

⁹ Carl Condit, *American Building Art: The Nineteenth Century* (New York: Oxford University Press, 1960), pp. 117-18; James Cooper, *Iron Monuments to Distant Posterity: Indiana's Metal Bridges, 1870-1930* (Indianapolis: Pierson Printing, 1987), p. 84.

¹⁰ T. Allen Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," *History News* 32, no. 5 (May 1977).

¹¹ Victor C. Darnell, *A Directory of American Bridge-Building Companies: 1840-1900*, Occasional Publication No. 4 (Washington, D.C.: Society for Industrial Archeology, 1984), pp. 85-86. See also Cooper, pp. 33-39.

Conclusion

The bridge is in fair condition, but is subject to undermining of the substructure after heavy rains. Some of the bottom lateral bracing is missing or damaged, and it appears that the bridge may soon need substantial work to remain a safe crossing of Choctaw Creek. The bridge has also suffered from a considerable number of perforations of the inclined end posts by bullets fired from the road.

Despite the ubiquitous nature of the Warren pony truss, the subject bridge is notable as a rare example of the work of American Bridge Company in Texas. In addition, it continues to function in its original location as a useful link in the transportation system of rural Grayson County.

SOURCES CONSULTED

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APPENDIX: Suggestions for Further Research

Due to limitations in the scope of the Texas Historic Bridges Recording Project, several questions which arose during the research and writing of this report remain unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. What was the date of erection?
2. How extensive were the operations of American Bridge Company in Texas and who served as their agent in this area?
3. What was the cost of the bridge?
4. At what subsidiary plant of American Bridge Company were the components of this bridge fabricated?